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ArtMED

D.2.1.1: AMOD Impact Assessment Tool Instructions

https://artmed.interreg-euro-med.eu/

Document Information

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Deliverable Title	AMOD Impact Assessment Tool Instructions
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Work Package Title	Transferring the AMOD impact assessment tool to ArtMED PTAs to plan autonomous mobility on demand
Activity Number	2.1
Name of Activity	Learning how to effectively use the AMOD impact assessment tool

Partner in charge	ECL & CARNET
Partners involved	Postojna, ECL, CARNET, TMLisboa, ALOT, PF
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.MOBI

Dynamic On-demand Tool for Mobility

User Manual

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For questions, technical issues, or feedback, please contact the maintenance team at:

support@e-cole.io

All platform updates and manual revisions will be announced on the home page.

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.MOBI
Dynamic On-demand Tool for Mobility

User Manual

Dotmobi is an Impact Assessment Tool that helps PTAs assess the viability and impact of (Autonomous) Mobility on Demand services.

Follow the steps below to complete a project assessment:

STEP 1

Log In & Create New Project

- Access the tool via: https://dot-mobi.interreg-euro-med.eu/
- Log in with your credentials or Sign in with a new account
- Click “Create New Project” and enter a project name
- In the same project you will be able to create various fleets.

STEP 2

Enter Regional Data

- Fill in contextual details such as population, area size and road network or public transport usage rate.
- Click “Save” to proceed

STEP 3

Define Service Quality

- Input user experience parameters such as max waiting time, travel flexibility or max distance to/from stops.
- Click “Save” to store service assumptions.

STEP 4

Input CAPEX and OPEX

- Provide cost data:
  - CAPEX: Vehicle purchase, infrastructure…
  - OPEX: Energy, maintenance, supervision…
- Add any hudden costs (e.g. cleaning, vandalism).

STEP 5

Process Internal Costs

- Review and confirm cost data.
- The tool calculates:
  - Required fleet size
  - Cost per km
  - Revenue/savings potential

Introduction

And accessing the platform

.mobi is an online platform designed to assist transportation professionals in sizing and economically evaluating on-demand public transport fleets. Developed since December 2024 and launched in May 2025 as part of the Artmed project by E-Cole and Centrale Lyon, the platform offers a modular and expandable environment. Ongoing maintenance and updates are provided by E-Cole. This user manual guides you through all features and workflow steps.

To access the platform, open your web browser and navigate to https://dot-mobi.interreg-euro-med.eu/. On the home page, you can register a new account or log in if you already have credentials.

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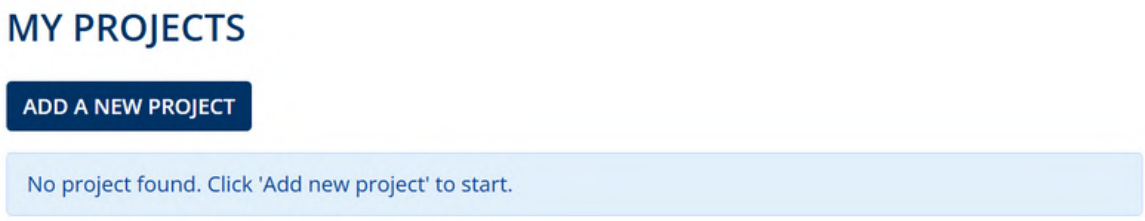
My projects Page

Once logged in, click 'My Projects' in the top navigation bar to view your projects. Here you can:

- Create a new project by clicking 'Add New Project' and providing a unique name.
- Access an existing project using the 'Access' button.
- Delete a project by selecting 'Delete'.
- Export a completed project to Excel via 'Export Excel'.

Each project serves as a container for related fleet scenarios, sharing common geographic, demographic, and temporal settings. You may include multiple fleet configurations within one project for comparison.



Project Workflow

Project Creation

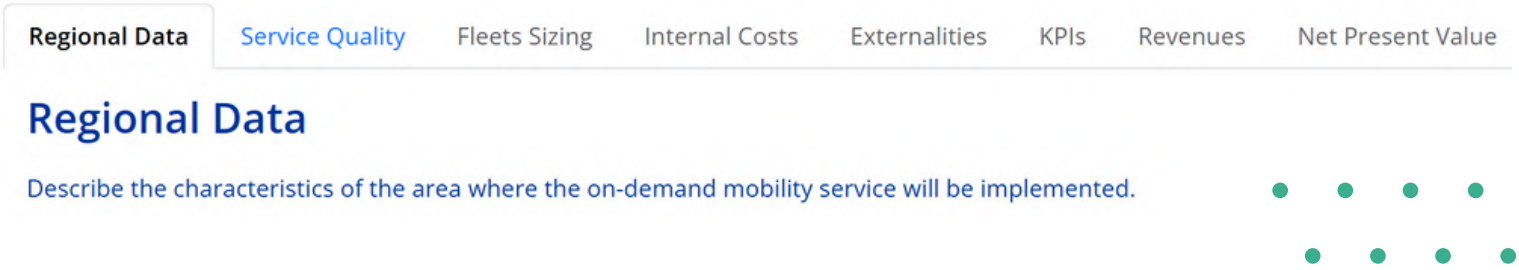
Projects are structured into sequential tabs that must be completed and validated in order. Validation at each stage unlocks the next tab.

The workflow is divided into two main phases:

- Phase 1: Fleet Sizing.
- Phase 2: Economic Analysis of the Sized Fleet.

Each step can be re-evaluated at any time. Once you re-evaluate a step, all subsequent tabs will be automatically re-evaluated as well. Please note: if you leave a tab without saving or evaluating, any changes you made in the opened forms will be lost.

Fleet Sizing



This form gathers all the key geographic, temporal and demand parameters to define the regional context for sizing and evaluating your transport fleet.

- **Country**: Select the country where the service will operate. All European Union countries are available. This data is used to compute services and externalities costs using a database.

- **Operating Diameter (km):** Define the service area as a circle by specifying its diameter. This distance can also be interpreted as the maximal distance for a trip.

- **Average Trip Speed (km/h):** Enter the expected average vehicle speed during trips. The sizing fleet algorithm uses the hypothesis of a constant travel speed. It can be interpreted as the total kilometers travelled per day divided by the total daily operating hours.

- **Total Daily Operating Hours:** Specify total service hours per day (1–24).

- **Enable Peak Hours:** Check to distinguish between peak and off-peak periods. In this case, 3 sizes will be computed. A peak size, off peak size and averaged all day.

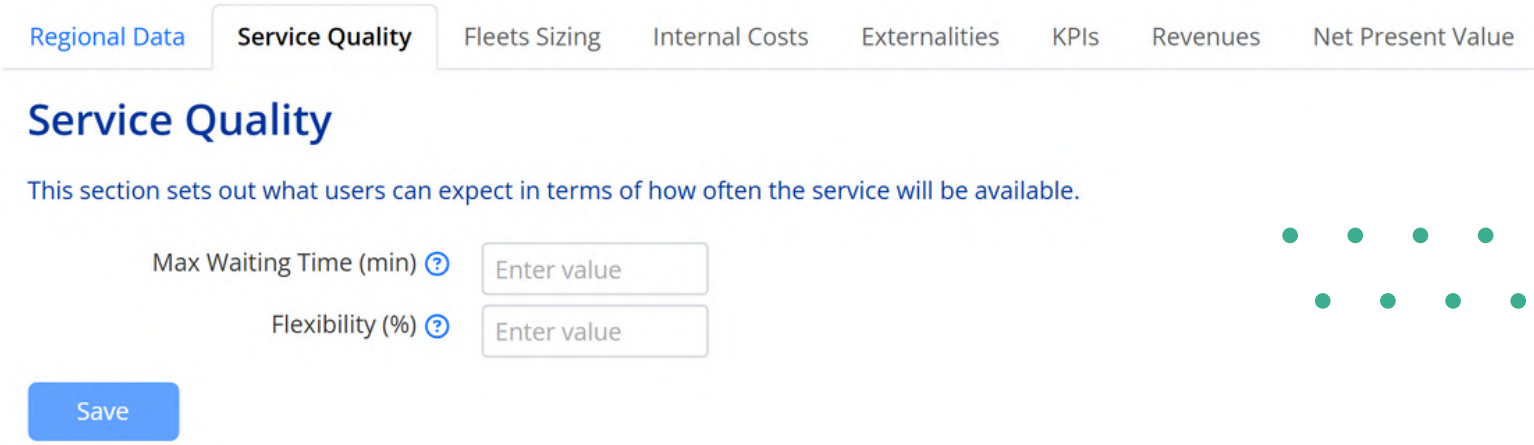
- **Peak/Off-Peak Operating Hours:** If peak hours enabled, indicate hours for each period.
    - *Note: this distinction between peak/off-peak operating hours in not mandatory.*

- **Total Daily Users:** Estimated average daily users.

- **Peak/Off-Peak Users:** Expected users during peak and off-peak periods.

- **Total Operating Days per Year:** Number of service days in a typical year.

Fleet Sizing

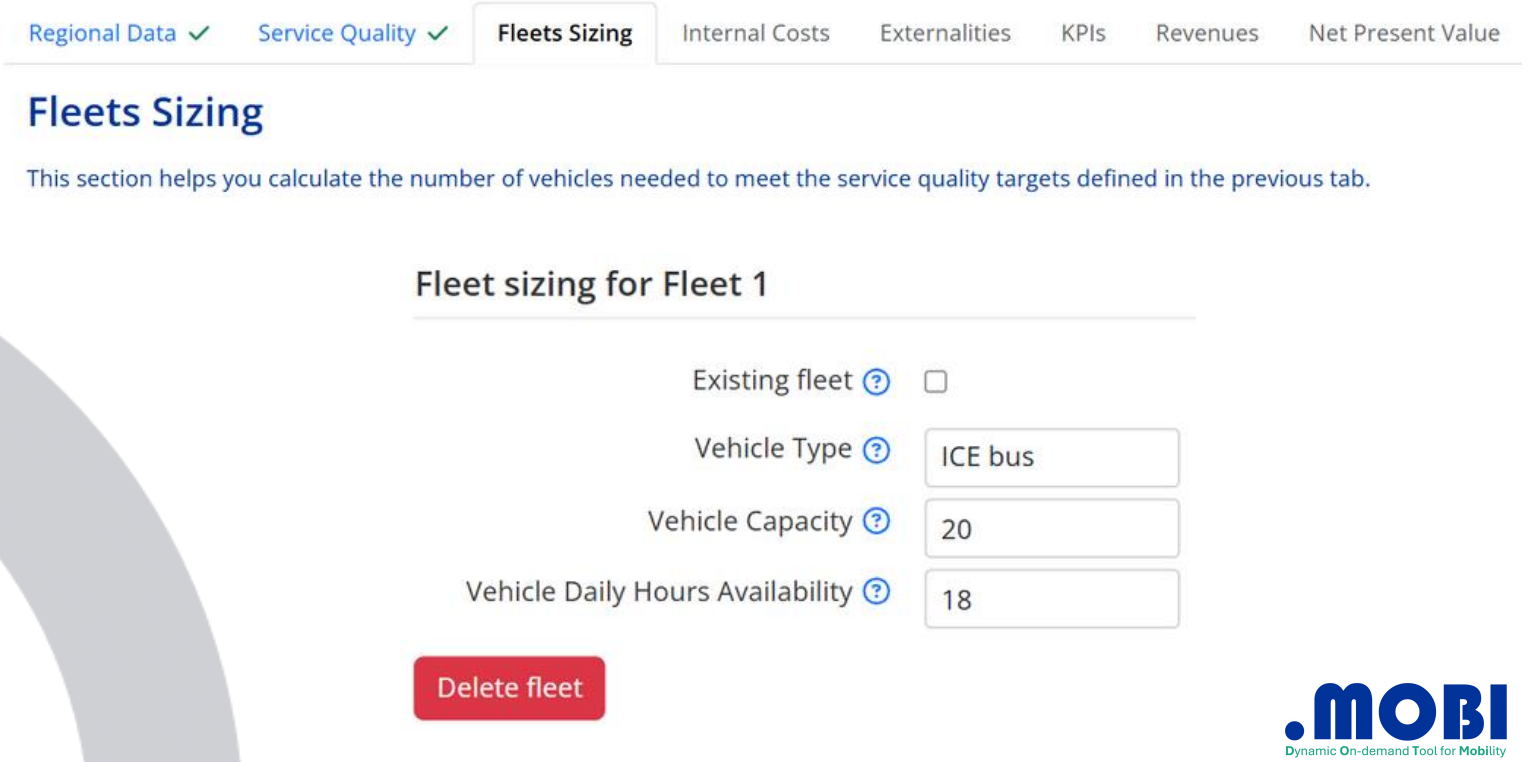


These settings define the performance targets for your on-demand transport service:

- **Max Waiting Time (min):** the maximum time a user may wait after placing a request for the on-demand service.
- **Flexibility (%):** the allowable delay, expressed as a percentage of the planned trip duration (calculated from expected trip length and average speed), before a trip is deemed late.

The following tab is one of the most important parts of the .mobi platform. It gathers the regional and service data provided and, combined with the following form provides an adequate evaluation of the sizing requirements for the transportation fleet.

NOTE: where applicable, the existing fleet may be presented to verify its capacity to meet the expected service requirements. In the absence of an existing fleet, the type of vehicle intended for future use in delivering the service should be indicated.



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Fleet Sizing inputs

Existing Fleet: Tick if you already have vehicles for this service.

Number of Existing Vehicles: Count of vehicles currently available.

Vehicle Type: Choose vehicle size or model from the dropdown menu. This data will be used for externalities computations.

Vehicle Capacity (passengers): Maximum passengers per vehicle. It is a hypothesis of this tool that the transportation fleet is homogeneous.

Vehicle Daily Hours Availability: Number of hours each vehicle will operate daily.

Fleet Sizing Results

The results are displayed in one or three columns depending on if peak/off-peak distinction is enabled. When it is the case, the evaluation is done on the scenario described on the Context line.

- Fleet Size: Total number of vehicles required, as computed properly.
- Average Trip Duration (min): Estimated journey time per trip.
- Average Vehicle Occupancy: Average number of passengers per trip.
- Total Passengers per Year: Projected annual passenger count.
- Total Kilometers per Year: Total distance covered annually by the fleet.

Fleet Size	18
Avg Trip Duration (min)	42.35
Average Vehicle Occupancy	20 / 20
Status	Missing 3 vehicles
Context	Averaged over the day (18 h), you expect 10000 users
Total Passengers per Year	3 650 000
Total km per Year	2 010 420

In order to continue the economic analysis, choose your preferred fleet size below:

Existing Fleet (15) | Computed Fleet (18)

At 100% flexibility, the One Vehicle Operating Area corresponds to the Total Service Area. Beyond this threshold, the model is not designed to reflect real-word conditions with complete accuracy, instead, it offers a broad estimation intended to support strategic decision-making.

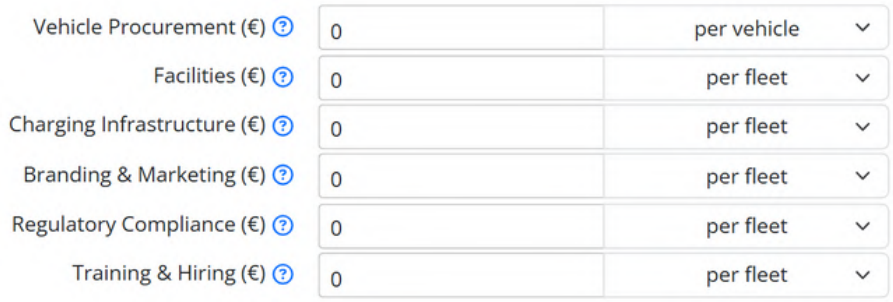
Economic Analysis

Internal Costs

At the beginning of the tab, the user can choose to apply data calculated by the fleet sizing tool or to enter custom values.

For each cost item, the user must specify whether it applies as a total fleet cost, per vehicle, per passenger, or per kilometer.

CAPEX



- Vehicle Procurement: Acquisition cost per vehicle.
- Facilities: Infrastructure costs (e.g., digital platform, payment systems).
- Charging Infrastructure: Installation cost if using electric vehicles.
- Branding & Marketing: Initial promotional expenses.
- Regulatory Compliance: Fees for permits and licenses.
- Training & Hiring: Costs for recruiting and training staff.

- Estimated depreciation period for capital expenditures.

OPEX

- Vehicle Costs: Insurance, maintenance, fuel or electricity, leases per vehicle.
- Drivers' Salaries: Total annual payroll for drivers and benefits.
- Other Personnel Costs: Dispatch, customer service staff salaries, and related expenses.
- Technology & Infrastructure: Platform licensing, IT support, navigation systems.
- Operational Costs: Scheduling management, cleaning, parking, facility usage fees.
- Administrative Costs: Office rental, utilities, legal, accounting, and other administrative services.

Economic Analysis

Externalities

This section presents the overall externalities costs for the fleet service. The available data is from the year 2019, and costs are adjusted using the cumulative inflation rate from the World Bank database for the specified country.

- **CO2 Emissions Reduction (tones/year):**
Estimated annual decrease compared to baseline.

- **Energy Consumption (kWh/km):**
Average energy use per kilometer.

- **Noise Impact:**
Qualitative or quantitative measure of noise reduction.

- **Accessibility Improvements:**
Percentage increase in service coverage or user accessibility.

Cost Category
Accidents Costs
Air Pollution Costs
Noise Costs
Congestion Costs
Climate Change Costs
Well-to-Tank Emission Costs
Habitat Damage Costs
Total (€)

KPIs

This section presents the overall Key Performance Indicators for the service, such as Cost per vehicle / per km and Cost per passenger / per km. These indicators are calculated by dividing total CAPEX by annual depreciation and adding total OPEX. Costs per passenger are computed using the average occupancy rather than the vehicle's full capacity.

- **Cost per Trip (€):**
Total annual cost divided by number of trips.

- **Cost per Passenger (€):**
Total cost divided by total passengers.

- **Revenue per Km (€):**
Total revenue divided by total kilometers.

- **Load Factor (%):**
Average occupancy relative to vehicle capacity.

KPIs for Fleet 1

Category
Total CAPEX (€)
Depreciation period (years)
Total OPEX (€/year)
Average Vehicle occupancy / Vehicle capacity
Cost per vehicle / per km (€)
Cost per passenger / per km (€)
Cost per vehicle / per km (with externalities) (€)
Cost per passenger / per km (with externalities) (€)

Economic Analysis

Regional Data ✓ | Service Quality ✓ | Fleets Sizing ✓ | Internal Costs ✓ | Externalities ✓ | KPIs ✓ | **Revenues** | Net Present Value

Revenues

This section allows the simulation of the yearly revenue sources for the service.

- Ticketing: Revenue per passenger trip.
- Subsidies: Total yearly government subsidies.
- Corporate Financing: Third-party or sponsorship funding amounts.
- Advertising: Income from on-board and service-related ads.
- Data Commercialization: Revenue from selling usage or operational data.
- EU Funding: Annual grants or funding from European Union programs.

Revenues for Fleet 1

For each REVENUE source item please precise if the given amount is per 1) per kilometer, 2) per passenger, 3) per vehicle or, 4) per fleet.

Ticketing (€/year)		per passenger
Subsidies (€/year)		per fleet
Financing from Companies (€/year)		per fleet
Advertising (€/year)		per fleet
Data Commercialization (€/year)		per fleet
EU Funding (€/year)		per fleet

+ Add revenue stream

Regional Data ✓ | Service Quality ✓ | Fleets Sizing ✓ | Internal Costs ✓ | Externalities ✓ | KPIs ✓ | Revenues ✓ | **Net Present Value**

Net Present Value

Net present value is a tool of Capital budgeting to analyze the profitability of a project or investment. It is based on the difference between the present value of cash inflows and present value of cash outflows over a period of time. The time value of money simply means that a piece of money is of more value today than it will be tomorrow which induces that forthcoming cash flows need to be discounted over the a period of time. The discounting rate can be either the current inflation rate or the bank interest rate. The relevant growth rate has to be decided according to the economic situation and the predictable uses of the service. We simplify the evaluation by calculating the difference between the initial investment I and cash flows that are expected for the service within estimated amortization period.

- **Initial investment:** Calculated with "Internal Costs" CAPEX"
- **Annual average cash inflows:** Calculated with "Revenues"
- **Annual average cash outflows:** Calculated with "Internal Costs" OPEX
- **Average annual cash flow (CF):** Equal to "annual cash inflows - annual cash outflows". If the result is negative, the service is not economically balanced.
- **Interest rate or inflation rate (r in %):** This rate is used to discount annual cash flows.
- **Annual growth of cash flows (g in %):** This rate is used to estimate the growth of cash flows. It can be zero.
- **Number of years defining the period of economic calculation.**

We calculate the sum S of expected cash flows divided by the annual discount rate for each of all years in the period (Here is an example for 4 years) :

$$S = CF + (CF \times (1+g)/(1+r)) + (CF \times (1+g)^2/(1+r)^2) + (CF \times (1+g)^3/(1+r)^3) + (CF \times (1+g)^4/(1+r)^4)$$

Net Present Value (NPV) = S - Initial Investment

- If $NPV < 0$, the service is **not economically balanced** during the estimated period.
- If $NPV \geq 0$, the service is **economically viable.**

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Conclusions

The .MOBI platform provides a powerful and accessible environment for the planning and economic evaluation of on-demand transport fleets. Its modular design and step-by-step workflow allow users to simulate and analyze a wide range of fleet configurations, adapting to regional contexts and service quality objectives.

By combining demand modeling, vehicle fleet sizing, and detailed cost analysis, including internal costs, externalities, and funding sources, .MOBI helps transport planners and public authorities make informed decisions grounded in data and economic viability.

As cities and regions transition toward more flexible, low-impact, and demand-responsive mobility solutions, .MOBI serves as a practical decision-support tool, accelerating the deployment of efficient and user-centered transport systems.

Continued feedback from users will be essential to refine and expand the platform's features. ArtMED remains committed to the ongoing maintenance and improvement of .MOBI, ensuring its relevance and usability across a broad spectrum of transport planning contexts.

For questions, suggestions, or support, users are encouraged to contact the development team at support@e-cole.io.

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